ABSTRACTS

Policy Research Working Paper Series

Numbers 2458–2498

See the subject index for topics relevant to your work

To obtain copies of individual working papers, please call, email, or write to the contact person listed in the last paragraph of each abstract.

The working papers may also be downloaded from the DECVP Website: *www.worldbank.org/research/workingpapers.*

The World Bank
Research Advisory Staff
Policy Research Dissemination Center
October-December 2000

ABSTRACTS
OCTOBER–DECEMBER 2000

Produced by the Policy Research Dissemination Center

Policy Research Working Paper Series

Numbers 2458–2498

Urban development

Transition

Poverty

2458. Choosing Rural Road Investments to Help Reduce Poverty

Dominique van de Walle
(October 2000)

A change in the transport sector's current approach to selecting rural road investments is warranted. A proposed approach builds on some of the poverty-focused "hybrid" methods found in recent rural road appraisals—recognizing that an important share of the benefits to the poor from rural roads cannot be measured in monetary terms.

Van de Walle examines how rural road investment projects should be selected and appraised when the objective is poverty reduction.

After critically reviewing past and current practices, van de Walle develops an operational approach grounded in a public economics framework in which concerns of equity and efficiency are inseparable, information is incomplete in important ways, and resources are limited. She addresses a key problem: that an important share of the benefits to the poor from rural roads cannot be measured in monetary terms.

The selection formula she proposes aims to identify places where poverty and economic potential are high and access is low. She illustrates the method using data for and project experience in Vietnam.

Among the advantages of proceeding as outlined in her proposal: This approach holds the hope of building capacity and is participatory; it extracts local information that may not be readily available to the central government; and it appears to be feasible because it relies on local authorities participating in the appraisal of subprojects.

This paper—a product of Public Economics, Development Research Group—is part of a larger effort in the group to study the impact of transport and other physical infrastructure on poverty. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at dvandewalle@worldbank.org. (30 pages)

2459. Short-Lived Shocks with Long-Lived Impacts? Household Income Dynamics in a Transition Economy

Michael Lokshin and Martin Ravallion
(October 2000)

In theory it is possible that a vulnerable household will never recover from a sufficiently large but short-lived shock to its income—which could explain the persistent poverty that has emerged in many transition economies. But this study for Hungary shows that, in general, households bounce back from transient shocks, although not rapidly.

In theory it is possible that the persistent poverty that has emerged in many transition economies is attributable to underlying nonconvexities in the dynamics of household incomes—such that a vulnerable household will never recover from a sufficiently large but short-lived shock to its income. This happens when there are multiple equilibria in household incomes, such that two households with the same characteristics can have different incomes in the long run.

To test the theory, Lokshin and Ravallion estimate a dynamic panel data model of household incomes with nonlinear dynamics and endogenous attrition. Their estimates using data for Hungary in the 1990s exhibit nonlinearity in the income dynamics.

The authors find no evidence of multiple equilibria. In general, households bounce back from transient shocks, although the process is not rapid.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to understand household-level vulnerability to shocks. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Sader, room MC3-556, telephone 202-473-3902, fax 202-522-1153, email address psader@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at mlokshin@worldbank.org or mravallion@worldbank.org. (26 pages)

2460. Labor Redundancy, Retraining, and Outplacement during Privatization: The Experience of Brazil's Federal Railway

Antonio Estache, Jose Antonio Schmitt de Azevedo, and Evelyn Sydenstricker
(October 2000)

When Brazil's Federal Railway was privatized, the team in charge of privatization made a significant effort to complement the incentive for voluntary reduction with an elaborate menu of training options. How did it work?

One of the most complex challenges of infrastructure privatization is its impact on employment. Often (but not always) private operators' main approach to cost-cutting is labor reduction. Private operators cannot afford the low levels of labor productivity typical in public companies if they are to be competitive and to deliver on their contractual obligations to provide cheaper, more reliable infrastructure services. But labor issues are so sensitive that government's early, direct involvement is seen as a way to address what potential investors see as a risk of privatization as well as to address the social concerns of the population, including the workers.

When Brazil's Federal Railway was privatized, the team in charge of privatization made a significant effort to complement the incentive for voluntary reduction with an elaborate menu of training options. Estache, de Azevedo, and Sydenstricker describe this experience in dealing with labor redundancy problems. They discuss the design of the program, highlight the connections between its components, and assess the program's achievements.

All things considered, they conclude, this staff reduction program was reasonably successful. The aimed-for improvements in productivity were achieved without major problems through a government-stimulated and -sponsored combination of early retirement and voluntary retrenchment. The concessionaire was willing to make quick decisions about the number of involuntary retrenchments it wanted to make, which helped sustain the momentum created by the government's prompt implementation of its own decisions and the fair treatment of workers.

The main problems came from the underestimate of time needed to agree on the strategy for implementing the training and outplacement programs. Informal evidence suggests that most workers found new jobs before many of the training programs were available. And the strategy adopted gave workers a good incentive (one month's pay) to sign up for the courses but provided little incentive for workers to show up, since they were paid up front.

This paper—a product of the Governance, Regulation, and Finance Division, World Bank Institute—is part of a larger effort in the institute to increase the understanding of infrastructure regulation. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Gabriela Chenet-Smith, room J3-147, telephone 202-473-6370, fax 202-676-9874, email address gchenet@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. Antonio Estache may be contacted at aestache@worldbank.org. (19 pages)

2461. Vertical Price Control and Parallel Imports: Theory and Evidence

Keith E. Maskus and Yongmin Chen
(October 2000)

Parallel imports are genuine products brought into a country without the authorization of the copyright, patent, or trademark owner. Countries vary considerably in their legal treatment of parallel imports, as determined by their choice of exhaustion doctrine. A new model analyzes parallel imports as a response to vertical pricing arrangements between a rights holder ("manufacturer") and a foreign distributor.

A policy of *national exhaustion* says that rights to control distribution end upon first sale only within a country, thereby permitting rights holders to exclude parallel imports. A policy of *international exhaustion* states that such rights end upon first sale anywhere and therefore permits parallel imports. The European Union has a policy of *regional exhaustion* within its territory. Language in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) suggests that this policy choice remains the prerogative of individual countries.

Maskus and Chen review the international policy debate about parallel imports, which are controversial because they erode the ability of intellectual property owners to segment markets. Against considerable opposition, for example, Australia recently deregulated its import controls in major copyrighted goods because domestic prices were evidently sustained at high levels by those controls. Both the European Union and the United States are considering permitting parallel imports of prescription pharmaceuticals from abroad.

Developing countries must consider their exhaustion regimes in the context of competition policies and intellectual property rights.

Economic theory demonstrates that the welfare tradeoffs in regulating parallel imports are complex and depend on circumstances.

Maskus and Chen advance a new model that analyzes parallel imports as a response to vertical pricing arrangements between a rights holder ("manufacturer") and a foreign distributor. In this model, if markets were segmented, the manufacturer would charge a wholesale price to its foreign distributor to ensure an efficient (profit-maximizing) retail price. But if markets were integrated by parallel trade, the distributor could purchase the good at a wholesale price and sell it back to the manufacturer's home market at the local retail price. If transport costs were low enough, this would be profitable, but would diminish the return to the manufacturer and waste resources in costly trade.

So there would be tradeoffs: Parallel imports would benefit consumers in the high-price country but hurt consumers in the low-price country. Such trade forces the manufacturer to set an inefficient wholesale price to limit its extent; it also consumes resources.

The welfare implications of allowing parallel imports are ambiguous. If the costs of engaging in such trade were low, there would be gains from permitting it; if the costs were high, it would be more sensible to ban it. Countries near each other, with low trade barriers, might prefer an open regime of parallel trade.

The vertical pricing model provides an explanation of this pricing behavior that is consistent with manufacturers' preferences to deter parallel trade.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to assess the impact of "second generation" instruments of trade protection on developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at keith.maskus@colorado.edu or yongmin.chen@colorado.edu. (40 pages)

2462. Foreign Entry in Turkey's Banking Sector, 1980–97

Cevdet Denizer
(October 2000)

One remarkable consequence of Turkey's financial liberalization has been the large number of foreign banks entering the banking sector. Their effect? They appear to have increased competition and to have reduced the overhead expenses of domestic commercial banks, strengthening profits.

Despite high and volatile inflation, a record number of foreign and local banks entered Turkey's banking sector after the country relaxed rules about bank entry and generally eliminated controls on interest rates and financial intermediation in 1980. The country's financial integration with the rest of the world took a big step forward with the opening up of the capital account in 1989. Capital inflows rose significantly, and the financial system became increasingly linked with external markets.

Denizer examines one dimension of liberalization: the impact of foreign banks entering the financial sector. Between 1980 and the end of 1997, 17 foreign banks and a number of new local banks entered the sector.

Denizer investigates how these banks' entry into the sector affected performance based on three measures: net interest margin, overhead expenses, and return on assets (all expressed as a percentage of total assets). He finds that:

- Foreign bank ownership is related to all three performance measures.

• Foreign bank entry reduced the overhead expenses of domestic commercial banks, strengthening profits.

• Despite their small scale of operations, foreign banks entering the sector had a strong effect on competition. But the market could use more competition.

• There are strong indications that foreign banks had a positive impact on financial and operations planning, credit analysis and marketing, and human capital.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to understand the effects of foreign bank entry in domestic financial markets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Irina Partola, room H4-346, telephone 202-473-5759, fax 202-522-2751, email address ipartola@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at cdenizer@worldbank.org. (29 pages)

2463. Personal Pension Plans and Stock Market Volatility

Max Alier and Dimitri Vittas
(October 2000)

Personal pension plans transfer investment risk to participating workers and expose them to the volatility of financial returns. Simple financial strategies lower the volatility of replacement rates but at a significant cost in terms of lower replacement rates. The purchase of variable annuities reduces the dispersion of replacement rates across generations without lowering their level.

One of the strongest objections to personal pension plans is that they transfer investment risk to individual workers, who are then exposed to the vagaries of equity and bond markets. Using historical U.S. data, Alier and Vittas investigate the impact of the volatility of investment returns on replacement rates in the context of personal pension plans.

They find large fluctuations in replacement rates across different cohorts of workers, if undiversified portfolios are used.

They then explore a number of simple financial strategies for coping with this problem, including:

• Portfolio diversification.

• A late, gradual shift to bonds.

• A gradual purchase of nominal or real annuities.

• A purchase of variable annuities.

The first three strategies lower the volatility of replacement rates, but at a significant cost in terms of lower replacement rates.

The purchase of variable annuities reduces the dispersion of replacement rates across generations without lowering their level—because of the persistence of the equity premium and the fact that the volatility of equity returns is lower, the longer the holding period.

Sophisticated financial engineering promises more efficient solutions to this problem, but it may not be feasible to apply it in developing countries (or in developing financial markets).

Neither Alier and Vittas's approach nor the more sophisticated financial engineering solutions would be able to deal effectively with persistent deviations of investment returns from long trends. But the authors' findings suggest that overconcern about the impact on replacement rates of short-term volatility in stock markets may not be warranted.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study pension systems and the impact of pension reform. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-444, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at malier@imf.org or dvittas@worldbank.org. (51 pages)

2464. The Decumulation (Payout) Phase of Defined Contribution Pillars: Policy Issues in the Provision of Annuities and Other Benefits

Estelle James and Dimitri Vittas
(October 2000)

The provision of annuities and other benefits during the decumulation phase of defined contribution (DC) pension plans raises major policy issues. Because private markets for annuities and disability benefits are not well developed even in the most advanced OECD countries, the resolution of these issues is likely to be a gradual process, with both countries and markets learning through experience.

Most countries reforming their pension system focus more on the accumulation phase than on decumulation (payout), because the number of beneficiaries is likely to be small initially, especially if older workers are discouraged from joining the new system. Policymakers place a priority on the new accumulation system being administratively efficient and well regulated.

But the decumulation phase must also be well organized and efficient. The purpose of pension systems is, after all, to pay retirement benefits—old age, survivor, and disability pensions. James and Vittas argue that:

• Payout arrangements are likely to evolve gradually, through trial and error, as problems are discovered and tackled.

• Adverse selection may not be as great a problem as is sometimes thought.

• Many other annuity and insurance market problems have yet to be solved, and policies must be formulated to make these markets work as well.

The underdevelopment of voluntary annuity markets is only partly explained by adverse selection, argue James and Vittas. Other factors are also at work: the bequest and precautionary motives for saving; individuals' myopia and ignorance; mistrust of insurance companies; the "luxury good" nature of annuities; tax policies that favor lump sum withdrawals; and last but not least public policies (such as the offer of social security pensions and the encouragement of occupational pension plans) that tend to crowd out individual annuities.

The long-term success of pension reform depends on vigorous efforts to develop the insurance industry. Weak and underdeveloped in most developing countries, the insurance industry should play a central role in providing old age, survivor, and disability benefits.

Many policy issues require careful thought and extensive empirical analysis: Should annuitization be mandatory, and at what level? Should indexed (or "real") annuities be required? Should variable annuities be permitted or encouraged?

Should joint annuities be required? How much "group rating" and "risk classification" should be permitted?

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study the implications of pension reform programs. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-444, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at ejames3@worldbank.org or dvittas@worldbank.org. (28 pages)

2465. Reforming Tax Expenditure Programs in Poland

Carlos B. Cavalcanti and Zhicheng Li
(October 2000)

Tax expenditure programs that Poland introduced in 1992 to compensate lower-income taxpayers for the withdrawal of subsidies have proliferated—making the normative tax system difficult for the average taxpayer to understand, reducing the tax base, and benefiting the higher-income taxpayers more than the taxpayers they were originally designed to help.

Poland has recently begun reforming its tax program. In December 1999 it announced a gradual reduction in the corporate income tax rate, from 34 percent in 1999 to 22 percent in 2004. Value added and excise taxes are being harmonized with European Union directives, which means higher value added tax rates on unprocessed foodstuffs, municipal services, and construction material, and higher excise rates on tobacco and alcohol. The reform of personal income tax law has been delayed, because of concern about the fairness of a rate reduction for higher-income taxpayers and hesitation about the government's proposal to remove or scale down existing tax expenditure programs.

Poland's personal income tax expenditure programs, introduced in 1992, have received growing attention as the cost of the programs has increased. Originally they were intended to compensate lower-income taxpayers for the withdrawal of price subsidies. But most of them are extremely regressive, benefiting higher-income taxpayers.

Tax expenditures are reductions in tax liabilities that result from preferential provisions, such as deductions, exemptions, credits, deferrals, preferential tax rates, and exclusions from taxation. They are effective government spending channeled through the tax system, usually as substitutes for direct government spending to achieve fiscal and political objectives.

Cavalcanti and Li contend that strengthening the administration of Poland's tax expenditure programs is the first step toward making them effective and equitable, limiting their costs, and preventing the tax base from shrinking. They discuss options for increasing the scrutiny of the tax expenditure programs, defining their opportunity costs and effect on the tax system.

Currently these programs enjoy a funding advantage over direct spending programs because they are not subject to systematic review. To limit the expansion of these programs and reduce their less desirable effects on the system, Cavalcanti and Li suggest defining a benchmark tax structure, establishing sunset dates for the programs, forecasting their costs, and reviewing their economic effectiveness, efficiency, and equity by comparing them with direct expenditures and subsidies.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to understand the quality of fiscal adjustment in Central and Eastern Europe. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anita Correa, room H4-318, telephone 202-473-8949, fax 202-522-2755, email address acorrea@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at ccavalcanti@worldbank.org or zli@worldbank.org. (23 pages)

2466. El Niño or El Peso? Crisis, Poverty, and Income Distribution in the Philippines

Gaurav Datt and Hans Hoogeveen
(October 2000)

In terms of its impact on poverty, the recent economic crisis in the Philippines was more of an El Niño phenomenon than a financial crisis.

Using household survey data for 1998, Datt and Hoogeveen assess the distributional impact of the recent economic crisis in the Philippines. The results suggest that the impact of the crisis was modest, leading to a 5 percent reduction in average living standards and a 9 percent increase in the incidence of poverty—with larger increases indicated for the depth and severity of poverty.

The greater shock came from El Niño rather than through the labor market. The labor market shock was progressive (reducing inequality) while the El Niño shock was regressive (increasing inequality).

Not all households were equally vulnerable to the crisis-induced shocks. Household and community characteristics affected the impact of the shocks. Ownership of land made households more susceptible to the El Niño shocks; higher levels of education made households more vulnerable to wage and employment shocks.

The impact of the crisis was greater in more commercially developed communities. Occupational diversity within a household helped mitigate the adverse impact.

There is some evidence of consumption smoothing by the households affected by the crisis, but the poor were less able to protect their consumption, which is a matter of policy concern.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, East Asia and Pacific Region—is part of a larger effort in the region to better understand the social impact of the crisis. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Taranaki Mailei, room MC8-142, telephone 202-458-7347, fax 202-522-1557, email address tmailei@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at gdatt@worldbank.org or hhoogeveen@econ.vu.nl. (38 pages)

2467. Does Financial Liberalization Relax Financing Constraints on Firms?

Luc Laeven
(October 2000)

Financial liberalization reduces imperfections in financial markets by reducing the agency costs of financial leverage. Small *firms gain most from liberalization, because the favoritism of preferential credit directed to large firms tends to disappear under liberalization.*

Laeven uses panel data on 394 firms in 13 developing countries for the years 1988–98 to learn whether financial liberalization relaxes financing constraints on firms. He finds that liberalization affects small and large firms differently.

Small firms are financially constrained before liberalization begins but become less so after liberalization. The financing constraints on large firms, however, are low both before and after liberalization. The initial difference between small and large firms disappears over time.

Laeven hypothesizes that financial liberalization has little effect on the financing constraints of large firms because they have better access to preferential directed credit in the period before liberalization. Financial liberalization also reduces imperfections in financial markets, especially the asymmetric information costs of firms' financial leverage.

Countries that liberalize their financial sectors tend to see dramatic improvements in political climate as well. Successful financial liberalization seems to require both the political will and the ability to stop the preferential treatment of well-connected, usually large, firms.

This paper—a product of the Financial Sector Strategy and Policy Department—is part of a larger effort in the department to study the benefits and risks of financial liberalization. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room MC9-624, telephone 202-473-3722, fax 202-522-2031, email address hvo1@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at llaeven@worldbank.org. (49 pages)

2468. Pricing, Subsidies, and the Poor: Demand for Improved Water Services in Central America

Ian Walker, Fidel Ordoñez, Pedro Serrano, and Jonathan Halpern
(November 2000)

Evidence from Central America's publicly owned and managed water supply companies indicates that the urban poor are ill served by current subsidy policies. The best way to improve water services for the urban poor, this study concludes, is for tariffs to reflect system costs and for consumption to be metered. This permits each household to determine how much it wants to spend on water while ensuring sustainability of services across the network. The attitudes of poor communities toward metering are generally positive.

Reformulating tariff and subsidy policies is central to improving water and sanitation services in developing countries. The traditional model of state enterprise service provision, coupled with residential tariffs set well below the cost of service, has generally delivered unsatisfactory results. Low internal generation of funds has impeded expansion of networks into poor communities and has resulted in very poor services there. Most of the subsidy has benefited higher-income groups. Reformers have proposed private provision to improve efficiency, cost-reflective tariffs to permit the systems to meet demand, and better-targeted subsidies.

But is there empirical evidence that existing subsidies are ineffective and that the poor could pay the full cost of water services? Analyzing household survey and water company data from cities of Central America and Venezuela, Walker, Ordoñez, Serrano, and Halpern confirm that:

- Households without piped connections pay a lot for small amounts of water from "coping sources."
- Most public water companies undercharge hugely, providing an implicit, generalized subsidy and accelerating their systems' decapitalization.
- There is little income-related differentiation in consumption and therefore in effective piped water tariffs. Volume-based tariffs would generate cross-subsidies from the rich to the poor if the rich consumed more water. But the data indicate that consumption of piped water varies little with income, so most of the water subsidy is captured by the nonpoor.
- Poor households that are not presently connected would clearly benefit from access to piped water supply. This would require increasing tariffs to cost-reflective levels. But where the urban poor already enjoy access, such tariff increases would have a disproportionate impact on this income group. This impact should be mitigated through better-targeted, temporary subsidies.
- The poor are often willing to pay much more than the present tariff for access to piped water but not necessarily the full cost of the monthly consumption assumed by planners (30 cubic meters). If tariffs were set to cover long-run financial costs, many poor households would consume much less. Improving the design of tariff structures and extending metering to such households would permit them to regulate their expenditures on water by controlling their consumption.

This paper—a product of the Finance, Private Sector, and Infrastructure Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the region to evaluate and disseminate lessons of experience in designing policies to improve the quality and sustainability of infrastructure services and to enhance the access of the poor to these basic services. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Silvia Delgado, room I5-196, telephone 202-473-7840, fax 202-676-1821, email address sdelgado@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at iwalker@esa.hn or jhalpern@worldbank.org. (23 pages)

2469. Risk Shifting and Long-Term Contracts: Evidence from the Ras Gas Project

Mansoor Dailami and Robert Hauswald
(November 2000)

Risk shifting and incomplete contracting lie at the heart of the agency relationship inherent in the procurement and financing of large-scale projects such as power plants, oil and gas pipelines, and liquefied natural gas facilities. An investigation of Ras Gas bonds provides empirical evidence of the risk-shifting consequences of contractual incompleteness.

Risk shifting and incomplete contracting lie at the heart of the agency relationship inherent in the procurement and financing of large-scale projects such as power plants, oil and gas pipelines, and liquefied natural gas (LNG) facilities. Resolving this agency problem is critical in structuring the nexus of long-term contracts—construction, operating, output sale, and financial contracts—commensurate with the projects' underlying technological and market organization.

By investigating the Ras Gas bonds—the largest and most liquid global project bonds ever issued in an emerging market economy—Dailami and Hauswald provide empirical evidence of the risk-shifting consequences of contractual incompleteness.

They relate the credit spreads of Ras Gas bonds to the bond spreads of the Korea Electric Power Company (Kepco), the major customer, in the context of a 25-year supply agreement, the oil price index used to price the LNG, emerging debt market returns, and various systematic and unsystematic risk variables.

Consistent with theoretical predictions, they find that the risk factors affecting the sales and purchase agreements drive perceptions of market risk for Ras Gas bonds. In particular, Ras Gas yield spreads reflect the market's risk assessment of Kepco. Other priced risks are energy price and foreign currency exposure (which influence Ras Gas credit spreads through their impact on Kepco), Korean economic variables, and spillovers from turbulence in European and Latin American emerging debt markets.

The authors' analysis shows that the design of each contractual arrangement is not independent, because risk factors relevant to one contract determine the price and risk premium of the other. Despite heavy capitalization and partial guarantees by the parent companies of Ras Gas, the offtake agreement essentially determines the riskiness of the bonds. Dailami and Hauswald interpret this as evidence of the nexus-of-contracts view of the firm in the presence of contractual incompleteness: Investors bear all residual risks and price their financial claims accordingly.

This paper—a product of the Governance, Regulation, and Finance Division, World Bank Institute—is part of a larger effort in the institute to disseminate the lessons of experience and best practices in infrastructure finance and risk management. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact William Nedrow, room J3-283, telephone 202-473-1585, fax 202-334-8350, email address wnedrow@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at mdailami@worldbank.org or rhauswald@rhsmith.umd.edu. (30 pages)

2470. Are Larger Countries Really More Corrupt?

Stephen Knack and Omar Azfar
(November 2000)

Or has evidence that government corruption is less severe in small countries been an artifact of sample selection?

Several authors claim to provide evidence that government corruption is less severe in small than in large countries. Knack and Azfar demonstrate that this relationship is an artifact of sample selection.

Most corruption indicators provide ratings only for the countries in which multinational investors have the greatest interest. These tend to include almost all large nations but, among small nations, only those that are well governed.

Knack and Azfar find that the relationship between corruption and country size disappears when one uses either a new corruption indicator with substantially increased country coverage or an alternative corruption indicator that covers all World Bank borrowers without regard to country size.

They also show that the relationship between corruption and trade intensity—a variable strongly related to population—disappears when samples less subject to selection bias are used.

This paper—a product of Regulation and Competition Policy, Development Research Group—is part of a larger effort in the group to identify the determinants of good governance and institutions conducive to long-run economic development. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-8526, fax 202-522-1155, email address psintimaboagye@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at sknack@worldbank.org or omar@iris.econ.umd.edu. (28 pages)

2471. Validating Operational Food Insecurity Indicators against a Dynamic Benchmark: Evidence from Mali

Luc J. Christiaensen, Richard N. Boisvert, and John Hoddinott
(November 2000)

Indicators of household food insecurity are typically static and thus ignore a key dimension of food insecurity.

An explicitly forward-looking food insecurity indicator is developed that takes into account both current dietary inadequacy and vulnerability to dietary inadequacy in the future. Relative to this dynamic benchmark, three readily available indicators are evaluated.

Christiaensen, Boisvert, and Hoddinott develop an explicitly forward-looking indicator of food insecurity that takes into account both current dietary inadequacy and vulnerability to dietary inadequacy in the future.

Application of this measure to data from northern Mali shows that neglecting the future dimension of food insecurity causes serious underestimation of food insecurity in this area.

The authors evaluate the performance, relative to their dynamic benchmark, of three readily available alternative indicators:

- An agricultural production index.
- A dietary diversity index.
- A coping strategy index.

Despite the uneven performance of these indexes relative to the individual components of the dynamic food insecurity indicator developed in the paper, they all demonstrate strong associations with that indicator. This is a promising result, given the urgent demand for reliable indicators of food insecurity.

This paper—a product of the Poverty Reduction and Social Development Unit, Africa Region—is part of a larger effort in the region to understand the evolution of poverty and inequality in Africa in the 1990s. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Luc Christiaensen, room J8-080, telephone 202-458-1463, fax 202-473-7913, email address lchristiaensen@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. (30 pages)

2472. Uzbekistan and Kazakhstan: A Tale of Two Transition Paths

Asad Alam and Arup Banerji
(November 2000)

Despite a common parentage for most of the twentieth century, Uzbekistan and Kazakhstan followed seemingly different paths in the transition to a market economy. Uzbekistan adopted a cautious, gradual approach to market reform, while Kazakhstan followed a more aggressive strategy. But has Kazakhstan done better economically?

Uzbekistan adopted a cautious, gradual approach to market reform. Kazakhstan followed a more aggressive strategy. But while Kazakhstan may have achieved a better policy environment, its economic performance has not been better than Uzbekistan's.

Alam and Banerji examine the interplay between policies, institutions, and initial conditions to examine several competing and complementary hypotheses about why the paths the two Central Asian countries took may have led to different economic outcomes. One possibility is that missing pieces in reform—especially deficiencies in the competitive environment—in combination with a rapidly diminishing role for the state may have limited the gains from the policy reforms in Kazakhstan.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to understand differences in policies, institutions, and performance in transition economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lorie Henson, room H4-347, telephone 202-458-4026, fax 202-522-2751, email address lhenson@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at aalam@worldbank.org or abanerji@worldbank.org. (25 pages)

2473. Banking Risks around the World: The Implicit Safety Net Subsidy Approach

Luc Laeven
(November 2000)

The degree of risk taking by a bank is related to the size of the gross subsidy that has been extended to the bank by the safety net. This subsidy can be calculated by applying a technique that models deposit insurance as a put option on the bank's assets.

Laeven calculates gross safety net subsidies for a large sample of banks in 12 countries to assess the relationship between the risk-taking behavior of banks and certain bank characteristics. He finds that gross safety net subsidies are higher for banks that have concentrated ownership, that are affiliated with a business group, that are small, or that have high credit growth, and for banks in countries with low GDP per capita, high inflation, or poor quality and enforcement of the legal system. These findings suggest that the moral hazard behavior of a bank depends on its institutional environment and its corporate governance structure.

Laeven also presents a matrix that shows estimates of safety net subsidies for a range of given combinations of equity volatilities and equity-to-deposit ratios. These figures could be used as input to an early warning system for both individual and systemic banking problems.

This paper—a product of the Financial Sector Strategy and Policy Department—is part of a larger effort in the department to study the performance and risks of banks. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room MC9-624, telephone 202-473-3722, fax 202-522-2031, email address hvo2@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at llaeven@worldbank.org. (34 pages)

2474. Exports and Information Spillovers

Alessandro Nicita and Marcelo Olarreaga
(November 2000)

A developing country's good (or bad) export performance in one market can affect its future export performance not only in the same market but also in "neighboring" markets. This happens if importers in different countries share information about a particular exporter's performance or if exporters themselves take advantage of the information acquired while exporting to similar markets. Thus, through information spillovers, export success (or failure) becomes cumulative across markets.

Exporters' performance in a particular market may affect their future exports to the rest of the world. Importers may base their future transaction decisions on the information revealed by exporters' past performance in other countries. Similarly, exporters acquire valuable information on foreign consumer tastes, product standards, or customs administration that may profitably be used in future transactions with other countries.

Nicita and Olarreaga estimate the effects of these information spillovers across markets on the export patterns of four developing countries (Egypt, the Republic of Korea, Malaysia, and Tunisia). A dollar increase in exports to the United States generates on average an extra 2 to 14 cents of exports to the rest of the world in the next period.

Social and ethnic networks seem to reinforce these information spillovers, especially in developing countries, where they appear to be geographically more concentrated. The exception is China and to some extent Hong Kong, probably reflecting a geographically more diversified migration pattern.

The exchange of information among current and potential export markets can significantly affect a developing country's export performance. Bilateral information spillovers across markets are negligible or nonexistent for exports from the United States, where there is less need to create a reputation in international markets. Similarly, Egypt's good export performance would be more easily noticed in Argentina or India (where the market is small) than would increased exports to France or the United States.

This paper—a product of Trade, Development Research Group—is part of a larger effort in the group to understand the role of information in developing countries' integration into world markets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Lili Tabada, room MC3-333, telephone 202-473-6896, fax 202-522-1159, email address ltabada@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at anicita@worldbank.org or molarreaga@worldbank.org. (36 pages)

2475. Industrial Growth and the Quality of Institutions: What Do (Transition) Economies Have to Gain from the Rule of Law?

David A. Grigorian and Albert Martinez
(November 2000)

Developing the legal and regulatory framework, improving contract enforcement, and reducing administrative barriers in the business environment increases the amount of investment and improves the efficiency of resource allocation.

Grigorian and Martinez empirically test the link between industrial growth and indicators of institutional quality. They find significant evidence that institutional quality affects industrial growth in 27 Asian and Latin American countries.

Their results suggest that the development of the legal and regulatory framework works its way to industrial growth through both investment and total factor productivity.

The implications for policymakers in transition economies: Institution building should complement privatization, public and private investment in education, research and development, and measures to promote foreign direct investment.

Specifically, policymakers should try to reduce corruption, eliminate bureaucratic barriers, and improve the legal environment and contract enforcement. Special attention should also be given to measures to deepen financial intermediation, improve the financial sector infrastructure, and increase the efficiency of financial transactions.

This paper—a product of the Private and Financial Sectors Development Unit, Europe and Central Asia Region—is part of a larger effort in the region to study the determinants of private sector growth in transition economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Anne Nelson, room H6-393, telephone 202-473-7117, fax 202-522-0073, email address anelson@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at dgrigorian@worldbank.org or amartinez2@worldbank.org. (20 pages)

2476. Measuring Banking Efficiency in the Pre- and Post-Liberalization Environment: Evidence from the Turkish Banking System

Cevdet A. Denizer, Mustafa Dinç, and Murat Tarimcilar
(November 2000)

Banking efficiency in Turkey was expected to improve after liberalization. Instead, it declined, perhaps because of increasing macroeconomic instability.

Denizer, Dinç, and Tarimcilar examine banking efficiency before and after liberalization, drawing on Turkey's experience. They also investigate the scale effect on efficiency by type of ownership.

Their findings suggest that liberalization programs were followed by an observable decline in efficiency, not an improvement. During the study period Turkish banks did not operate at the optimum scale.

Another unexpected result was that efficiency was no different between state-owned and privately owned banks. Banks that were privately owned or foreign owned had been expected to respond better to liberalization, because they were smaller and more dynamically structured, but they were no more efficient than state-owned banks.

One reason for the systemwide decline in efficiency might have been the general increase in macroeconomic instability during the period studied.

This paper—a joint product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region, and the Development Data Group—is part of a larger effort in the Bank to understand banking efficiency after financial liberalization in Europe and Central Asia. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Mustafa Dinç, room MC2-814, telephone 202-473-6233, fax 202-522-3669, email address mdinc@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The other authors may be contacted at cdenizer@worldbank.org or muratt@gwu.edu. (58 pages)

2477. Picking the Poor: Indicators for Geographic Targeting in Peru

Norbert R. Schady
(November 2000)

Geographic targeting of social programs to the poor has become increasingly important in Peru. The potential payoffs of such targeting are large, and differences in outcomes with different targeting indicators are small.

Geographic targeting is perhaps the most popular mechanism used to direct social programs to the poor in Latin America.

Schady empirically compares geographic targeting indicators available in Peru. He combines household-level information from the 1994 and 1997 Peru Living Standards Measurement Surveys and district-level information from the 1993 Peru Population and Housing Census.

He then conducts a series of simulations that estimate leakage rates; concentration curves; the impact of transfers on poverty as measured by the headcount index, poverty gap, and P_2 measures of the Foster-Greer-Thorbecke family; and nonparametric (kernel) densities when transfers are based on alternative indicators.

He concludes that there is substantial potential for geographic targeting in Peru. The differences in outcomes across geographic targeting indicators are small and not statistically significant.

This paper—a product of the Poverty Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the region to explore the potential of geographic targeting. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Tania Gomez, room I8-102, telephone 202-473-2127, fax 202-522-0054, email address tgomez@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at nschady@worldbank.org. (23 pages)

2478. Institutions, Politics, and Contracts: The Attempt to Privatize the Water and Sanitation Utility of Lima, Peru

Lorena Alcázar, Lixin Colin Xu, and Ana Maria Zuluaga
(November 2000)

That Lima's water system was in near-crisis was not enough to bring about radical change. Partial reforms to reduce many of the city's worst problems were carried out under public management. But a quarter of Lima's citizens still had no access to water or sewerage connections, extended service interruptions were common, and more than a third of the scarce water supply was wasted. Why did the push for privatized water and sanitation fail?

The main reason Lima failed to implement a concession was geographical: the scarcity of water sources meant high marginal costs, partly for pumping water from deep wells and building adequate storage for dry periods. High extraction costs were compounded by years of neglect; much of the system needed to be replaced. Attracting private investors meant setting prices high enough to recover these high costs and provide a reasonable return on capital.

But the government had subsidized costs for years, so a concession would have required a sharp and sudden price increase to cover marginal costs. Moreover, any forward-looking investor would want to slow the pace of future investment by curbing demand through more effective (meter-based) bill collection. And cross-subsidies, which reduce the incentive to conserve water, would also have to be reduced.

The ultimate cause of the concession's failure was geographical but the proximate cause was political. Privatizing a utility is politically tricky if it involves higher prices and the controversial ceding of monopoly powers to private parties, especially foreigners. Private participation in water is further hampered by the social importance of water and by the lack of international experience and the technical difficulties in designing privatization reform in the sector. At the same time, water offers fewer benefits than other utilities—few revenues to reward supporters or compensate losers—and the price increases likely in Peru would especially hurt the urban poor, who were important to the president's support base. After a favorable start, the political equation shifted against privatization.

The concession's failure was costly, in access goals not fully met, in adverse effects on health, and in the failure to curb consumption through metering—and hence in continued depletion of the aquifer and its increasing contamination by ocean salt.

Peru's institutional weaknesses, especially its lack of an autonomous judiciary, might have limited how much could have been achieved. But considering the net gains from private operation in the much weaker institutional settings in Africa, Lima would probably have been better off with a concession.

This paper—a product of Regulation and Competition Policy, Development Research Group—is part of a larger effort in the group to study the political economy of infrastructure reform. The study was funded by the Bank's Research Support Budget under the research project "Regulating Water Supply." Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-7644, fax 202-522-1155, email address psintimaboagye@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. Lixin Colin Xu may be contacted at lxu1@worldbank.org. (56 pages)

2479. Estimating the Effects of Corruption: Implications for Bangladesh

Aminur Rahman, Gregory Kisunko, and Kapil Kapoor
(November 2000)

Countries that are serious about reducing corruption tend to attract more investment, both domestic and foreign, and to accelerate economic growth and poverty reduction.

Building on the pioneering work of Barro (1991) and Mauro (1995) to include the most recent years for which data are available (for Bangladesh in the 1990s), Rahman, Kisunko, and Kapoor investigate the relationships between corruption and growth and between corruption and investment, both domestic and foreign, to see whether they have changed from earlier decades. Then they move away from Mauro's implicit assumption that the corruption index value for a relatively short period of time can be used as a proxy for the long run and further augment Mauro's model by including significant regional dummy variables in an attempt to take account of various region-specific effects. The authors also analyze the sensitivity of corruption in the presence and absence of various policy, geographic, and demographic variables that are widely used in empirical growth and investment literature.

The findings suggest that countries serious about improving governance and reducing corruption should redefine the role of government, overhaul the system of incentives, and strengthen domestic institutions to make sure the necessary checks and balances are in place. Such an approach to reform would help attract more investment—both domestic and foreign—and would accelerate economic growth and poverty reduction.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, South Asia Region—was prepared as a background paper for the World Bank report "Corruption in Bangladesh: Costs and Cures." Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Sandra Powell, room MC10-326, telephone 202-473-3526, fax 202-522-7480, email address spowell@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at uctpmra@ucl.ac.uk, gkisunko@worldbank.org, or kkapoor@worldbank.org. (25 pages)

2480. Productivity Growth and Resource Degradation in Pakistan's Punjab: A Decomposition Analysis

Mubarik Ali and Derek Byerlee
(November 2000)

The introduction of green revolution technologies in wheat and rice production in Pakistan's Punjab province reversed the country's food crisis and stimulated rapid agricultural and economic growth. But resource degradation through intensifica-

tion, monocropping, and mismanagement of water resources has offset much of the productivity effect of technological change.

The introduction of green revolution technologies in wheat and rice production in Asia in the mid-1960s reversed the food crisis and stimulated rapid agricultural and economic growth. But the sustainability of this intensification strategy is being questioned in light of the heavy use of external inputs and growing evidence of a slowdown in productivity growth and degradation of the resource base.

Ali and Byerlee address the critical issue of long-term productivity and the sustainability of Pakistan's irrigated agriculture. To estimate changes in total factor productivity in four production systems of Punjab province, they assemble district-level data on 33 crops, 8 livestock products, and 17 input categories.

They find that average annual growth in total factor productivity was moderately high (1.26 percent) for both crops and livestock for the period 1966–94, but observe wide variation in productivity growth by cropping system.

A second, disaggregated data set on soil and water quality reveals significant resource degradation. The authors use the two data sets to decompose the effects of technical change and resource degradation through application of a cost function.

They find that continuous and widespread resource degradation (as measured by soil and water quality variables) has had a significant negative effect on productivity, especially in the wheat-rice system, where resource degradation has more than offset the productivity effects of technological change.

Degradation of the health of the agroecosystem was related in part to modern technologies, monocropping, and mismanagement of water resources.

The results call for urgent analysis of technology and policy options to arrest the degradation of resources.

This paper—a joint product of the Rural Development Department and the Asian Vegetable Research and Development Center—is part of a larger effort to support the development of sustainable intensification of irrigated agricultural systems. The study was funded by the Bank's Research Support Budget under the research project "Total Factor Productivity Growth in Post–Green Revolution Agriculture of Pakistan and Northwest India." Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Derek Byerlee, room MC5-759, telephone 202-458-7287, fax 202-614-0065, email address dbyerlee@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. Mubarik Ali may be contacted at mubarik@netra.avrdc.org.tw. (30 pages)

2481. Foreign Direct Investment in Africa: Policies Also Matter

Jacques Morisset
(November 2000)

A few Sub-Saharan countries, by improving their business environment, have begun to attract more substantial foreign direct investment than other African countries with bigger domestic markets and greater natural resources. Like Ireland and Singapore, perhaps they can become competitive internationally and attract sustainable foreign direct investment.

Africa has not succeeded in attracting much foreign direct investment in the past few decades. When countries did attract multinational companies, it was principally because of their (abundant) natural resources and the size of their domestic market. Angola, Côte d'Ivoire, Nigeria, and South Africa have traditionally been the main recipients of foreign direct investment in Sub-Saharan Africa.

But Morisset shows that a few Sub-Saharan countries have generated interest among international investors by improving their business environment. In the 1990s, Mali, Mozambique, Namibia, and Senegal attracted substantial foreign direct investment—more so than countries with bigger domestic markets (Cameroon, Republic of Congo, and Kenya) and greater natural resources (Republic of Congo and Zimbabwe).

Mali and Mozambique, which improved their business climate spectacularly in the 1990s, did so with a few strategic actions: liberalizing trade, launching an attractive privatization program, modernizing mining and investment codes, adopting international agreements on foreign direct investment, developing a few priority projects that had multiplier effects on other investment projects, and mounting an image-building effort in which political figures such as the nation's president participated.

These actions are similar to those associated with the success of other small countries with limited natural resources, such as Ireland and Singapore about 20 years ago.

This paper—a product of the Foreign Investment Advisory Service, International Finance Corporation—is part of a larger effort to understand foreign direct investment flows in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Nessa Busjeet, room I9-107, telephone 202-473-3997, fax 202-974-4303, email address nbusjeet@ifc.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at jmorisset@ifc.org. (20 pages)

2482. Can Institutions Resolve Ethnic Conflict?

William Easterly
(November 2000)

Ethnic diversity has a more adverse effect on economic policy and growth when a government's institutions are poor. But poor institutions have an even more adverse effect on growth and policy when ethnic diversity is high.

High-quality institutions—reflected in such factors as rule of law, bureaucratic quality, freedom from government expropriation, and freedom from government repudiation of contracts—mitigate the adverse economic effects of ethnic fractionalization identified by Easterly and Levine (1997) and others.

Ethnic diversity has a more adverse effect on economic policy and growth when a government's institutions are poor. But poor institutions have an even more adverse effect on growth and policy when ethnic diversity is high. In countries where the institutions are good enough, however, ethnic diversity does not lessen growth or worsen economic policies.

Good institutions also reduce the risk of wars and genocides that might otherwise result from ethnic fractionalization. However, these forms of violence are not the channel through which ethnic fragmentation and its interaction with institutions affect economic growth.

Ethnically diverse nations that want to endure in peace and prosperity must build good institutions.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to study the political economy of policymaking and institutions. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kari Labrie, room MC3-456, telephone 202-473-1001, fax 202-522-3518, email address klabrie@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at weasterly@worldbank.org. (32 pages)

2483. The Credit Crunch in East Asia: What Can Bank Excess Liquid Assets Tell Us?

Pierre-Richard Agénor, Joshua Aizenman, and Alexander Hoffmaister
(November 2000)

A two-step approach is used to assess the extent to which the credit crunch in East Asia was supply- or demand-driven. The results for Thailand suggest that the contraction in bank lending that accompanied the crisis was the result of supply factors.

Agénor, Aizenman, and Hoffmaister propose a two-step approach for assessing the extent to which the fall in credit in crisis-stricken East Asian countries was a supply- or demand-induced phenomenon.

The first step involves estimating a demand function for excess liquid assets held by commercial banks.

The second step involves establishing dynamic projections for the periods after the crisis and assessing whether or not residuals are large enough to be viewed as indicators of an "involuntary" accumulation of excess reserves.

The results for Thailand suggest that the contraction in bank lending that accompanied the crisis was the result of supply factors. Thai firms (presumably small and medium-size ones) faced binding constraints in getting access to credit markets after the crisis.

This paper—a product of the Economic Policy and Poverty Reduction Division, World Bank Institute—is part of a larger effort in the institute to understand the macroeconomic effects of credit market imperfections. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Maria Gosiengfiao, room J4-282, telephone 202-473-3363, fax 202-676-9810, email address mgosiengfiao@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. Pierre-Richard Agénor may be contacted at pagenor@worldbank.org. (32 pages)

2484. Banking Crises in Transition Economies: Fiscal Costs and Related Issues

Helena Tang, Edda Zoli, and Irina Klytchnikova
(November 2000)

How 12 transition economies dealt with banking crises.

Tang, Zoli, and Klytchnikova look at strategies for dealing with banking crises in 12 transition economies—five from Central and Eastern Europe (CEE): Bulgaria, the Czech Republic, Hungary, Macedonia, and Poland; the three Baltic states: Estonia, Latvia, and Lithuania; and four countries from the Commonwealth of Independent States (CIS): Georgia, Kazakhstan, the Kyrgyz Republic, and Ukraine.

Three types of strategies were used to deal with the crises. The CEE countries generally pursued extensive restructuring and recapitalizing of banks; most CIS countries pursued large-scale liquidation; and the Baltic states generally pursued a combination of liquidation and restructuring.

The strategy pursued reflected macroeconomic conditions and the level of development in a country's banking sector. There were more new banks in the former Soviet Union (FSU—the CIS and Baltic states), but they tended to be small, undercapitalized, and not deeply engaged in financial intermediation.

The CEE countries generally incurred higher fiscal costs than the FSU countries but ended up with sounder, more efficient banking systems, with many of the recapitalized banks being privatized to strategic foreign investors. The CIS countries pursued a less fiscally costly approach but have been left with weak banking systems and low levels of intermediation. The Baltic states appear to have struck a good balance, incurring modest fiscal costs while making their systems sounder and more efficient.

The findings suggest the following:

- Operational, financial, and institutional restructuring should be undertaken in parallel.
- Financial restructuring should involve adequate recapitalization to deter moral hazard and repeated recapitalization.
- Operational restructuring should entail privatization to core investors (particularly to reputable foreign banks).
- The enterprise problems underlying banking problems must also be addressed.
- Fiscal costs were reduced when governments dealt only with bad debt inherited from the socialist period; when small banks that held few deposits were allowed to fail, where the social costs of such failure were low; and when only banks that got into trouble because of external shocks were rescued while those suffering from poor management were liquidated.
- The government, not the central bank, should undertake bank restructuring. Central bank refinancing is not transparent and could lead to hyperinflation.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to review lessons of experience in transition economies. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Armanda Carcani, room H4-326, telephone 202-473-0241, fax 202-522-2751, email address acarcani@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at htang@worldbank.org or ezoli@imf.org. (78 pages)

2485. Are Corruption and Taxation Really Harmful to Growth? Firm-Level Evidence

Raymond Fisman and Jakob Svensson
(November 2000)

Evidence from Uganda confirms that corruption retards development even more than taxation does.

Exploiting a unique data set containing information about the estimated bribe payments of Ugandan firms, Fisman and Svensson study the relationship between bribe payments, taxes, and firm growth in Uganda for the period 1995–97.

Using industry-location averages to circumvent the potential problem of endogeneity and to deal with issues of measurement error, they find that both the rate of taxation and the rate of bribery are negatively correlated with firm growth. For the full data set, a one percentage point increase in the bribery rate is associated with a three percentage point reduction in firm growth—an effect about three times that of taxation.

Moreover, after excluding outliers, the authors find that bribery has a much greater negative impact on growth, and taxation a considerably smaller one.

This provides some validation of firm-level theories of corruption, which posit that corruption retards development even more than taxation does.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to study the causes and consequences of corruption. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rina Bonfield, room MC3-354, telephone 202-473-1248, fax 202-522-3518, email address abonfield@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at rf250@columbia.edu or jakob.svensson@iies.su.se. (24 pages)

2486. Who Must Pay Bribes and How Much? Evidence from a Cross-Section of Firms

Jakob Svensson
(November 2000)

Ugandan firms typically have to pay bribes when dealing with public officials whose actions directly affect the firms' business operations. How much? The more a firm can pay, the more it has to pay.

Svensson exploits a unique data set on corruption containing information about estimated bribe payments by Ugandan firms. To guide the empirical analysis he develops a simple rent-extortion model, which yields predictions on both the incidence of bribery and the amount paid. Both predictions are consistent with the data.

Firms typically have to pay bribes when dealing with public officials whose actions directly affect the firms' business operations. And the amount paid in bribes is not a fixed sum for a set of public services but depends on the firm's ability to pay.

Controlling for other potential explanations of the relationship between "ability to pay" and equilibrium graft, Svensson shows that the more a firm can pay, the more it has to pay.

This paper—a product of Macroeconomics and Growth, Development Research Group—is part of a larger effort in the group to study the causes and consequences of corruption. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rina Bonfield, room MC3-354, telephone 202-473-1248, fax 202-522-3518, email address abonfield@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at jakob.svensson@iies.su.se. (43 pages)

2487. Finance and Macroeconomic Volatility

Cevdet Denizer, Murat F. Iyigun, and Ann L. Owen
(November 2000)

Countries with more developed financial sectors experience fewer fluctuations in real per capita output, consumption, and investment growth. But it matters how the financial sector develops: the proportion of credit provided to the private sector is important in explaining volatility.

Countries with more developed financial sectors experience fewer fluctuations in real per capita output, consumption, and investment growth. But the manner in which the financial sector develops matters.

The relative importance of banks in the financial system is important in explaining consumption and investment volatility. The proportion of credit provided to the private sector best explains volatility of consumption and output.

Denizer, Iyigun, and Owen generate their main results using fixed-effects estimation with panel data from 70 countries for the years 1956–98.

Their general findings suggest that the risk management and information processing provided by banks may be especially important in reducing consumption and investment volatility. The simple availability of credit to the private sector probably helps smooth consumption and GDP.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region—is part of a larger effort in the region to understand the links between finance and macroeconomic volatility. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Irina Partola, room H4-346, telephone 202-473-5759, fax 202-522-2751, email address ipartola@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at cdenizer@worldbank.org, murat.iyigun@frb.gov, or aowen@hamilton.edu. (28 pages)

2488. Revisiting the Link between Poverty and Child Labor: The Ghanaian Experience

Niels-Hugo Blunch and Dorte Verner
(November 2000)

In Ghana children from poor households are far more likely to engage in child labor activities than are children from nonpoor households. Girls generally work more than boys, and rural children work more than urban children.

The link between poverty and child labor has traditionally been regarded as well established. But recent research has questioned the validity of this link, claiming that poverty is not a main determinant of child labor.

Starting from the premise that child labor is not necessarily harmful, Blunch and Verner analyze the determinants of harmful child labor, viewed as child labor that directly conflicts with children's accumulation of human capital, in an effort to identify the most vulnerable groups. Identifying these groups might enable policymakers to take appropriate action.

The authors reinstate the positive relationship between poverty and child labor.

Moreover, they find evidence of a gender gap in child labor linked to poverty. Girls as a group (as well as across urban, rural, and poverty subsamples) are consistently found to be more likely to engage in harmful child labor than boys. This gender gap may reflect cultural norms (an issue that calls for further research).

The incidence of child labor increases with age, especially for girls.

In Ghana there are structural differences—across gender, between rural and urban locations, and across poverty quintiles of households—in the processes underlying child labor.

This paper—a joint product of Human Development 3, Africa Technical Families, and the Economic Policy Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the Bank to investigate and understand the processes underlying child labor. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hazel Vargas, room I8-138, telephone 202-473-7871, fax 202-522-2119, email address hvargas@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at nblunch@worldbank.org or dverner@worldbank.org. (21 pages)

2489. Banking Crises and Exchange Rate Regimes: Is There a Link?

Ilker Domaç and Maria Soledad Martinez Peria
(November 2000)

Pursuing a policy of exchange rate stability reduces the probability of banking crises, particularly in developing countries.

Domaç and Peria investigate the links between banking crises and exchange rate regimes, using a comprehensive data set that includes developed and developing countries over the last two decades.

In particular, they examine whether the choice of exchange rate regime affects the likelihood, cost, and duration of banking crises.

Empirical results indicate that adopting a fixed exchange rate diminishes the likelihood of a banking crisis in developing countries. But once a banking crisis occurs, its real costs—in terms of forgone output growth—are higher for countries with more stringent exchange rate requirements.

The duration of crises seems not to be affected by exchange rate policy. Instead, it is influenced mainly by the size of the credit boom before the crisis.

This paper—a joint product of the Poverty Reduction and Economic Management Sector Unit, Europe and Central Asia Region, and Finance, Development Research Group—is part of a larger effort in the Bank to understand the causes of banking crises. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Armanda Carcani, room H4-326, telephone 202-473-0241, fax 202-522-2755, email address acarcani@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at idomac@worldbank.org or mmartinezperia@worldbank.org. (42 pages)

2490. Contractual Savings, Stock, and Asset Markets

Gregorio Impavido and Alberto R. Musalem
(November 2000)

Cross-country and time-series evidence from some OECD and developing countries shows that pension funds and life and nonlife insurance companies contribute to stock market development.

Impavido and Musalem study the relationship between the development of insurance and contractual savings (the assets and portfolio composition of pension funds, and life and nonlife insurance companies) and the development of stock markets (market capitalization and value traded). Their contribution lies in providing cross-country and time-series evidence on a hypothesis that is very popular—but had not been substantiated—among supporters of funded pension systems and insurance in which reserves are largely invested in tradable securities (equities and bonds).

The authors present a three-assets model (money, quasi money, and shares) to study the effects of the development of contractual savings (pension funds and life insurance companies) and nonlife insurance companies on assets market equilibrium and on stock market development. They use an unbalanced panel of 21 OECD and 5 developing countries and an error components two-stage least squares (EC2SLS) estimator, including a test for endogeneity of these institutional investors.

The results support the hypothesis that contractual savings and nonlife insurance companies can be treated as exogenous to the development of stock markets; that contractual savings and nonlife insurance companies, as well as their portfolio policies, promote stock market development as measured by stock market capitalization and value traded as a share of GDP.

The results show that stock market capitalization is positively correlated with the return on stocks, the assets of contractual savings and nonlife insurance companies, the shares of stocks in the portfolios of contractual savings and nonlife insurance companies, and the value traded of stocks. Stock market capitalization is negatively correlated with the real interest rate, the real return on money (measured by the inverse of inflation), and stock market volatility.

Stock market value traded is positively correlated with the shares of stocks in the portfolios of contractual savings and nonlife insurance companies, and the real return on money. It is negatively correlated with the real interest rate.

The authors conclude that insurance and contractual savings are powerful instruments for developing stock markets, providing depth and liquidity. Higher liquidity, in turn, further promotes market capitalization.

This paper—a product of the Financial Sector Development Department—is part of a larger effort in the department to study the effects of contractual savings on financial markets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Patricia Braxton, room MC9-704, telephone 202-473-2720, fax 202-522-7105, email address pbraxton@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at gimpavido@worldbank.org or amusalem@worldbank.org. (42 pages)

2491. Labor Demand and Trade Reform in Latin America

Pablo Fajnzylber and William F. Maloney
(November 2000)

Data provide only mixed support for the idea that trade liberalization has an impact on own-wage labor demand elasticities. If globalization is making the lives of workers more insecure, it is probably working through some other mechanism.

There are concerns that trade reform and globalization will increase the uncertainty that the average worker, especially the relatively unskilled worker, faces. The increased competitiveness of product markets and greater access to foreign inputs, the argument goes, will lead to more elastic demand for workers. This may have adverse consequences for both labor market volatility and wage dispersion.

Fajnzylber and Maloney argue that while the case that trade liberalization should increase own-wage elasticities may be broadly compelling for competitive import-competing industries, it is less so for imperfectly competitive, nontradable, or export industries. They test the hypothesis using establishment-level panel data from three countries with periods of liberalization.

The data provide only mixed support for the idea that trade liberalization has an impact on own-wage elasticities. No consistent patterns emerge.

If globalization is making the lives of workers more insecure, it is probably working through some other mechanism.

This paper—a product of the Poverty Reduction and Economic Management Sector Unit, Latin America and the Caribbean Region—is part of a larger effort in the region to study the impact of liberalization on labor market risk. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Tania Gomez, room I8-102, telephone 202-473-2127, fax 202-522-0054, email address tgomez@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. William Maloney may be contacted at wmaloney@worldbank.org. (43 pages)

2492. Health Insurance Reform in Four Latin American Countries: Theory and Practice

William Jack
(November 2000)

Argentina, Brazil, Chile, and Colombia have reformed the ways health insurance and health care are organized and delivered, have extended formal coverage to previously marginalized groups, and have tried to finance this extension fairly. Each has reformed health insurance differently.

Jack examines public economics rationales for public intervention in health insurance markets, draws on the literature of organizational design to examine alternative intervention strategies, and considers health insurance reforms in four Latin American countries—Argentina, Brazil, Chile, and Colombia—in light of the theoretical literature.

Equity has been the main reason for large-scale public intervention in the health insurance sector, despite the well-known failures of insurance and health care markets associated with imperfect information.

Recent reforms have sought less to make private markets more efficient than to make public provision more efficient, sometimes by altering the focus and function of existing institutions (such as the *obras sociales* in Argentina) or by encouraging the growth of new ones (such as Chile's ISAPREs).

Generally, these four Latin American countries have reformed the ways insurance and care are organized and delivered, have tried to extend formal coverage to previously marginalized groups, and have tried to finance this extension fairly.

Colombia instituted an implicit two-tiered voucher scheme financed through a proportional wage tax.

Chile's financing mechanism is similar but the distribution of benefits is less progressive, so the net effect is less redistributive.

Argentina's remodeled *obras* system went halfway: the financing base is similar and there is some implicit redistribution from richer to poorer *obras,* but the quality of insurance increases with income.

On the face of it, Brazil's health insurance system is less redistributive than those of the other three countries, as no tax is earmarked for financing health insurance. But taxes paid by higher-income taxpayers are not reduced when they choose private insurance, highlighting the problem of examining the health sector independent of the general tax and transfer system.

This paper—a product of Public Economics, Development Research Group—was prepared as part of a regional analysis of social risk management in Latin America and the Caribbean. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC2-609, telephone 202-473-7698, fax 202-522-1154, email address hsladovich@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at wgj@georgetown.edu. (49 pages)

2493. Annuity Markets in Comparative Perspective: Do Consumers Get Their Money's Worth?

Estelle James and Dimitri Vittas
(November 2000)

Private annuity markets are not well developed even in the most advanced OECD countries. But they are growing rapidly in some countries, in response to mandatory retirement savings plans. Preliminary results show that in these countries the cost of annuities is lower than might be expected.

Pension reforms normally focus on the accumulation phase, plus term insurance that provides benefits for the disabled and for dependent survivors, all of which are immediate concerns. Decumulation of the capital in workers' retirement savings accounts appears to be far in the future. But in the second generation of reforms, countries have begun paying attention to eventual decumulation—either through gradual withdrawals or through annuitization, which provides longevity insurance. At this point it becomes important to learn whether annuity markets exist and how they operate.

James and Vittas summarize preliminary results of a continuing research project that analyzes annuity markets in Australia, Canada, Chile, Israel, Singapore, Switzerland, and the United Kingdom. They focus on understanding whether annuity markets can be relied upon to provide reliable retirement income at reasonable prices.

One way to approach this question is to explore whether the expected payouts and the "money's-worth ratio" differ across countries, and if so, why, and what light can be thrown on the existence and amount of adverse selection.

Annuity markets are poorly developed for various reasons: worker myopia, precautionary and bequest saving (not served by most annuity products), distrust of insurance companies (and unwillingness to turn sizeable savings over to them), adverse selection, and the crowding-out effect of social security (which automatically annuitizes the largest share of people's retirement wealth).

Preliminary findings suggest that the cost of annuities is lower than might be expected. When the risk-free discount rate is used, the money's -worth ratios of nominal annuities based on annuitant mortality tables exceed 97 percent (in some cases they are over 100 percent). Even when population mortality tables are used, they exceed 90 percent—neither the industry "take" nor the effects of adverse selection appear to be as large as anticipated.

But real annuities (in Chile, Israel, and the United Kingdom) have money's-worth ratios 7 to 9 percent lower than those of nominal annuities. And when the "riskier" corporate bond rate is used for discounting purposes, there is a further 7 percent reduction.

The main policy issues include public versus private provision, the role of insurance companies in term and risk intermediation, the level of compulsory annuitization, and the need for robust regulation of annuity providers.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study the development of annuity markets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at ejames3@worldbank.org or dvittas@worldbank.org. (34 pages)

2494. The Relevance of Index Funds for Pension Investment in Equities

Ajay Shah and Kshama Fernandes
(November 2000)

The case for index funds is predicated on the observed inability of active managers to outperform market indexes over long periods. Agency conflicts between investors and fund managers are another important motivation, as index funds benefit from simple, unambiguous accountability.

The rise of index funds over the past 25 years has been a remarkable phenomenon. The traditional rationale for the success of index funds is market efficiency, net of transaction costs. Shah and Fernandes also focus on the role of agency conflicts between fund managers and investors, which are hard to resolve, given the low power of statistical tests of performance.

Most of the empirical evidence about the superiority of index funds comes from the United States. Shah and Fernandes discuss issues associated with the application of index funds in developing countries, as well as policy issues in the financial sector that affect the enabling market infrastructure for index funds.

They also apply these ideas to thinking about the relevance of index funds for pension investment.

The equity premium provides powerful motivation for equity investment by pension funds. Index funds make it possible to sidestep the complexities of forming contracts and monitoring institutions to govern fund managers.

In developing countries that seek to use index funds in pension investment, there are avenues through which policymakers can make index funds more viable. In many countries there are significant avenues for improving construction of the market index as well as market mechanisms used in the equity market.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study the promotion of pension funds. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. (31 pages)

2495. The Australian Annuity Market

David M. Knox
(November 2000)

The private market for life annuities (with longevity insurance) is not well developed in Australia. It is crowded out partly by the public provision of means-tested old-age pensions and partly by retirees' preference for lump sum payments and, when constrained by law, for allocated annuities that do not provide longevity insurance.

In Australia, a means-tested old-age public pension is paid from general tax revenues. A full pension (equivalent to roughly a quarter of the average wage) is currently paid to more than half the aged population, and a reduced pension is paid to another quarter of the aged population. About 20 percent receive no old-age public pension because of the level of their income or assets.

There is also a compulsory system under which employers contribute at least 7 percent of salaries into a superannuation plan for the vast majority of employees. (This minimum rate will gradually rise to 9 percent in 2002.) More than 80 percent of superannuation benefits are received as lump sums; when public sector employees are excluded, the figure rises to almost 90 percent.

The market for private life annuities with longevity insurance is very small. Greater use is made of allocated annuities, which are similar to income drawdowns in the United Kingdom or scheduled withdrawals in Latin American countries.

The value of life annuities, measured by the money's worth ratio, compares favorably with that of annuities available in the United Kingdom and United States. But these ratios are calculated on the basis of conservative government bond yields. Many investors prefer allocated annuities—which are perceived to offer considerable advantages in flexibility and higher potential returns—despite the absence of longevity insurance.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to study the development of annuity markets. Copies of the paper are available free from the

World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Agnes Yaptenco, room MC3-446, telephone 202-473-1823, fax 202-522-1155, email address ayaptenco@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. (26 pages)

2496. Perspectives on the Sources of Heterogeneity in Indian Industry

Somik V. Lall and G. Chris Rodrigo
(November 2000)

A study of variations in technical efficiency across four industrial sectors in India shows that managerial effectiveness significantly influences efficiency and that considerable benefits derive from location within established industrial clusters for particular industries. Liberalization and globalization are likely to bring significant productivity gains even in low-technology industries as managers gear up to meet the challenges of competition.

Lall and Rodrigo examine technical efficiency variation across four industrial sectors in India, using a stochastic production frontier technique. The results are comparable to technical efficiency distribution patterns obtained in other countries.

The authors examine heterogeneity in firm-level efficiency against internal, firm-level characteristics and against external characteristics (industry and location).

The results suggest that managerial effectiveness significantly influences efficiency and that considerable benefits derive from location within established industrial clusters for particular industries.

The methodology and findings indicate that the study of industry-specific technical efficiency patterns is a useful analytical tool for tracking domestic firms' response to liberalization and the advance of market forces.

An important policy implication of Lall and Rodrigo's results: There is considerable room for efficiency gains through better organization and management of production processes and improved supply chain management, even in the highly organized corporate sector. These gains could be achieved by purely internal learning processes with no extra investment in physical plant or equipment, or with the help of outside consultants, or through business alliances with partners from industrial countries (a rising trend).

The results also show that greater technical efficiency correlates with better energy use and higher investments in plant management.

How firms can be induced to undertake such investments in the "software" of production is an important issue. Liberalization and globalization are likely to bring significant productivity gains even in low-technology industries as managers gear up to meet the challenges of competition.

This paper—a product of Infrastructure and Environment, Development Research Group—is part of a larger effort in the group to understand the role of economic geography and urbanization in the development process. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Roula Yazigi, room MC2-622, telephone 202-473-7176, fax 202-522-3230, email address ryazigi@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The authors may be contacted at slall1@worldbank.org or crodrigo@gmu.edu. (30 pages)

2497. State Policies and Women's Autonomy in China, India, and the Republic of Korea, 1950–2000: Lessons from Contrasting Experiences

Monica Das Gupta, Sunhwa Lee, Patricia Uberoi, Danning Wang, Lihong Wang, and Xiaodan Zhang
(November 2000)

State policies can enormously influence gender equity. They can mitigate cultural constraints on women's autonomy (as in China and India) or slow the pace of change in gender equity (as in the Republic of Korea). Policies to provide opportunities for women's empowerment should be accompanied by communication efforts to alter cultural values that limit women's access to those opportunities.

Das Gupta, Lee, Uberoi, Wang, Wang, and Zhang compare changes in gender roles and women's empowerment in China, India, and the Republic of Korea. Around 1950, these newly formed states were largely poor and agrarian, with common cultural factors that placed similar severe constraints on women's autonomy. They adopted very different paths of development, which are well known to have profoundly affected development outcomes. These choices have also had a tremendous impact on gender outcomes, and today these countries show striking differences in the extent of gender equity achieved. China has achieved the most gender equity, the Republic of Korea the least. The authors conclude that:

- States can exert enormous influence over gender equity. They can mitigate cultural constraints on women's autonomy (as in China and India) or slow the pace of change in gender equity despite women's rapid integration into education, formal employment, and urbanization (as in the Republic of Korea).
- The impact of policies to provide opportunities for women's empowerment can be greatly enhanced if accompanied by communication efforts to alter cultural values that place heavy constraints on women's access to those opportunities.

This paper—a product of Poverty and Human Resources, Development Research Group—is part of a larger effort in the group to examine the institutional bases of social inclusion and poverty reduction. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Monica Das Gupta, room MC3-633, telephone 202-473-1983, fax 202-522-1153, email address mdasgupta@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. (34 pages)

2498. Sustaining Economic Welfare: Estimating Changes in Per Capita Wealth

Kirk Hamilton
(November 2000)

With the notable exception of China, in most countries with below-median per capita income the growth rate of the population is greater than that of total wealth. This trend is ultimately unsustainable. For many of these countries, policies for sustainability will require both boosting savings and slowing population growth.

The World Bank's *World Development Indicators 1999* highlights for the first time the "genuine" rate of saving for more than 100 countries around the globe. Genuine saving values the total change in economic assets, thereby providing an indicator of whether an economy is on a sustainable path.

The Bank's new estimates of genuine saving broaden the usual national accounts definitions of assets to include human capital, minerals, energy, forest resources, and the stock of atmospheric carbon dioxide.

Genuine saving measures the change in total assets rather than the change in per capita assets. Genuine saving data may answer the question, "Did total wealth rise or fall over the accounting period?" But they do not address the question of whether an economy is sustainable with a growing population. Genuine saving could be positive even though per capita wealth is declining.

Hamilton explores the issue of measuring changes in per capita wealth—factoring in both growth in total assets (as measured by genuine saving) and population growth—as a more comprehensive indicator of sustainability.

First he develops a theoretical approach to estimating total wealth. Then he presents cross-country estimates of changes in per capita wealth.

Based on preliminary estimates, he concludes that in the majority of countries below the median per capita income, wealth is accumulating more slowly than the population is growing.

This paper—a product of the Office of the Director, Environment Department—is part of a larger effort in the department to apply economic approaches to environmental management. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Luz Rivera, room MC5-206, telephone 202-458-2819, fax 202-522-1735, email address lrivera @worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/ workingpapers. The author may be contacted at khamilton@worldbank.org. (28 pages)